

# Adherence to recommendations for endoscopy practice during COVID-19 pandemic in Latin America: how are we doing it?

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## ABSTRACT

**Background and aims** Digestive endoscopy is considered a high-risk procedure for COVID-19. Recommendations have been made for its practice during the pandemic. This study was conducted to determine adherence to recommendations for endoscopy practice during the COVID-19 pandemic in Latin America (LA). **Methods** A survey was conducted of endoscopists from LA consisting of 43 questions for the evaluation of four items: general and sociodemographic features, and preprocedure, intraprocedure and postprocedure aspects. **Results** A response was obtained from 338 endoscopists (response rate 34.5%) across 15 countries in LA. In preprocedure aspects (hand washing, use of face masks for patients, respiratory triage area, training for the placement/removal of personal protective equipment (PPE) and availability of specific area for the placement/removal of PPE), there was adherence in <75%. Regarding postprocedure aspects, 77% (261/338) had reused PPE, mainly the N95 respirator or higher, and this was with a standardised decontamination procedure only in 32% (108/338) of the time. Postprocedure room decontamination was carried out by 47% on >75% of occasions. In relationship to intraprocedure aspects (knowledge of risk and type of endoscopic procedures, use of PPE, airway management in patients and infrastructure), there was adherence in >75% for all the parameters and 78% of endoscopists only performed emergencies or time-sensitive procedures. **Conclusions** Adherence to the recommendations for endoscopy practice during the COVID-19 pandemic is adequate in the intraprocedure aspect. However, it is deficient in the preprocedure and postprocedure aspects.

## INTRODUCTION

On 30th January 2020, the WHO declared a Public Health Emergency of International Importance due to the outbreak of a new coronavirus originating in the province of Hubei, China.<sup>1</sup> The virus was later named SARS-CoV-2.<sup>2</sup> The resulting disease is called

## Summary box

### What is already known about this subject?

► Different associations around the world have made recommendations for gastrointestinal endoscopy practice during the COVID-19 pandemic to protect patients and healthcare providers during the pandemic.

### What are the new findings?

► Adherence to the recommendations for endoscopy practice during the COVID-19 pandemic in Latin America is adequate in the intraprocedure aspect. However, it is deficient in the preprocedure and postprocedure aspects.

### How might it impact on clinical practice in the foreseeable future?

► Given the fact that pandemic is still active in Latin America, endoscopists need to be more actively involved in monitoring and enforcing preprocedure and postprocedure recommendations.

COVID-19.<sup>3</sup> SARS-CoV-2 enters and replicates by binding to ACE type 2 (ACE2) receptor. ACE2 receptor is abundant in the alveolar epithelium but it is also present in epithelial cells of the digestive tract.<sup>4</sup> Viral fragments have been found in the stools of infected individuals raising concern about a digestive infection route.<sup>5</sup> Therefore, SARS-CoV-2 is potentially transmissible during endoscopy because endoscopic procedures generate aerosols and microdroplets with a possibility of infection via the faecal–oral route.<sup>6,7</sup>

Healthcare workers (HCWs) have an increased risk of COVID-19.<sup>8</sup> In Mexico, it is estimated that 20% of confirmed cases of COVID-19 are HCWs.<sup>9</sup> Doctors make up 32% of those affected.<sup>10</sup>

Different associations around the world have made recommendations for gastrointestinal endoscopy practice during the COVID-19 pandemic aimed to protect patients and HCWs during the pandemic.<sup>11–15</sup> These recommendations begin with risk stratification of patients by searching for signs or symptoms of COVID-19 prior to endoscopic procedures followed by the implementation of preventive measures for HCWs, training in wearing and removing personal protective equipment (PPE), the use and possible reuse of PPE, cleaning of endoscopic facilities and tracing patients after the procedure.<sup>16</sup>

However, the level of adherence to these recommendations by endoscopist doctors in Latin America (LA) is not known. Information related to the practice of endoscopy during the COVID-19 pandemic is important to take focused action and improve endoscopy practice. The objective of this study was to determine adherence to recommendations for endoscopy practice during the COVID-19 pandemic in LA.

## METHODS

A prospective survey directed towards endoscopists in LA was performed. A questionnaire in Spanish comprising 43 questions was designed using an electronic application (SurveyMonkey, Palo Alto, California, USA) to investigate issues related to adherence to recommendations for endoscopy practice during the COVID-19 pandemic, based mainly on the European Society for Gastrointestinal Endoscopy and the European Society of Gastroenterology and Endoscopy Nurses and Associates recommendations covering four main areas: 17 questions on general aspects (sociodemographic, work sector, information medium and current situation of the workplace), 9 questions on preprocedure (assessment of the patient and previous training received), 11 questions on intraprocedure (knowledge of risk and type of endoscopic procedures, use of PPE, airway management in patients and infrastructure), and 6 questions on postprocedure (telephone follow-up of the patient, PPE reutilisation and disinfection of the endoscopy room). We defined *adequate adherence* when the aspect evaluated was followed >75% of the time. No personal or sensitive data from the respondents were included, and responses were completely anonymous.

A pilot study (validation) was conducted by invitation addressed to 30 endoscopist members of the Mexican Association of Gastrointestinal Endoscopy (AMEG) to determine the correct understanding of questions and deficiencies in response options. The final questionnaire format was sent to all members of AMEG and the Inter-American Society for Digestive Endoscopy (SIED) using email. The duration of the survey was less than 10 min and it could only be answered once. For the survey in Brazil, the final questionnaire was translated and subsequently revised by a Brazilian doctor for the correct understanding in Portuguese. In this case, the questionnaire was sent through an electronic messaging service

using the researcher's endoscopist contacts. The survey remained open for 14 days for the questionnaire in Spanish (7–21 May 2020) and in Portuguese (16–30 June 2020).

A database was created using Excel and analysis was performed using SPSS V.24. Sample size calculation was performed using Epi info. Knowing that the total AMEG population of endoscopists by 2020 is 784, 258 participants were required for the survey to be representative, expecting a confidence level of 95%. The exact number of SIED members is not known since it does not count members individually, but through membership of the different LA societies. Therefore, it does not have a database of all members, only members of the director's boards of each society. The survey was sent to those members. In the case of Brazil, the survey invitation was made through the contacts of local authors participating in this project.

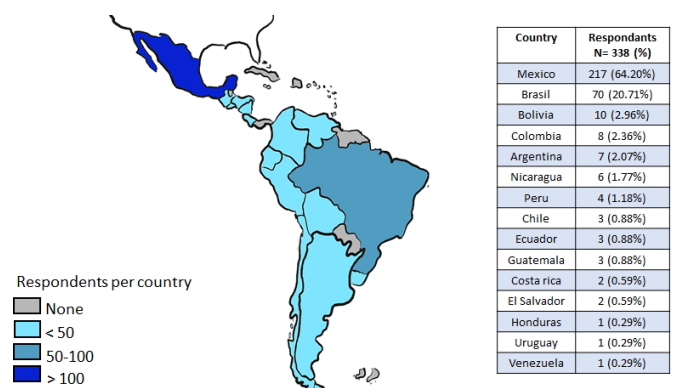
Descriptive statistics were performed using means, medians and frequencies according to the type of variable with the  $\chi^2$  test and multiple logistic regression for the analysis of categorical variables considering statistically significant differences with a p value of less than 0.05. All analyses were performed using the program SPSS V.20.

## RESULTS

### General features

The time taken to answer the survey was in average 9 min. The survey was sent to 784 members of the AMEG, 92 members of the director's boards of SIED, and 102 endoscopists from Brazil. A response was obtained from 338 endoscopists (response rate 34.5%) from 15 countries in LA (figure 1). Demographic characteristics of the participants are shown in table 1. Thirty-three per cent (114/338) reported suffering from a disease associated to a risk of serious evolution of COVID-19.

Seventy-one per cent (239/338) received a written plan for patient care and operation of the endoscopy unit during the coronavirus pandemic. Work teams had been set up to avoid simultaneous contagion in 10.6% (36/338). There were hospitalised patients with



**Figure 1** Geographical distribution of participating endoscopists.

**Table 1** General characteristics of participating endoscopists

Characteristic	Number (%)
<b>Sex*</b>	
Male	241 (71)
Female	97 (29)
Age (years)†	46 (39–56)
<b>Body mass index*</b>	
Normal	132 (39)
Overweight	152 (45)
Obesity class 1	45 (13)
Obesity class 2	6 (2)
Obesity class 3	3 (1)
<b>Comorbidity*</b>	
None	224 (66)
Hypertension	63 (19)
Diabetes	19 (5)
COPD	1 (0.3)
Asthma	5 (1.4)
Any cardiopathy	9 (2.7)
Autoimmune disease	3 (0.9)
Immunosuppressive therapy	1 (0.3)
Cirrhosis	1 (0.3)
Cancer	2 (0.6)
<b>Academic formation*</b>	
Internal Medicine/Gastroenterology	172 (51)
Surgery	137 (40.5)
Other	29 (8.5)
<b>Place of work*</b>	
Private	125 (37)
Public	62 (18)
Both	151 (45)

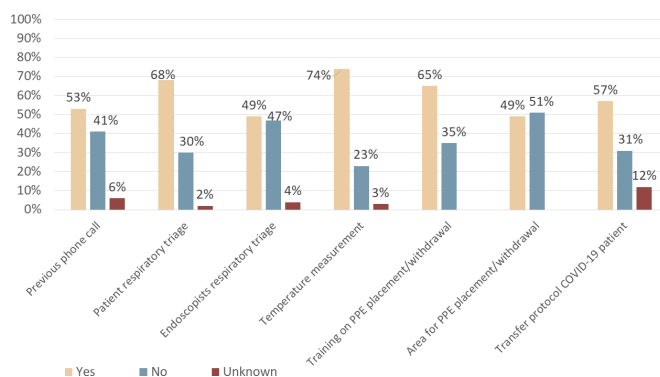
\*Frequency and percentage.

†Median and IQR.

COPD, chronic obstructive pulmonary disease.

COVID-19 in 71% (239/338) of endoscopist workplaces. At the time of the survey, changes in the schedule of endoscopic procedures since the beginning of COVID-19 pandemic had been in place for more than 8 weeks in the case of 41% (140/338) of endoscopists, between 4 and 8 weeks for 38% (129/338), between 2 and 4 weeks for 17% (56/338) and less than 2 weeks for only 4% (13/338). Seventy-four per cent (165/223) of endoscopists who had seen patients with a high suspicion of or confirmed COVID-19 considered that they adhere to current recommendations >75% of the time. At the time of the survey, 1.8% (6/338) of endoscopists had been infected with COVID-19.

Information about recommendations for endoscopy practice during the COVID-19 pandemic was most

**Figure 2** Adherence to preprocedure recommendations. PPE, personal protective equipment.

frequently obtained from scientific journals (81%, 246/338), followed by webinars/online sessions (73%, 246/338), the internet (49%, 164/338) and newspapers/television (6%, 19/338).

### Preprocedure aspects

None of the items of this area had adequate adherence (figure 2).

For outpatient care, 41% (139/338) reported that the patients were invited to perform hand washing >75% of the time, 19% reported <25% of the time (64/338), 13% (44/338) reported between 25% and 75% of the time and 27% (91/338) did not know. Fifty-three per cent (179/338) of the respondents provided surgical masks to patients >75% of the time, 34% (115/338) to <25% of the time and 13% (44/338) between 25% and 75% of the time.

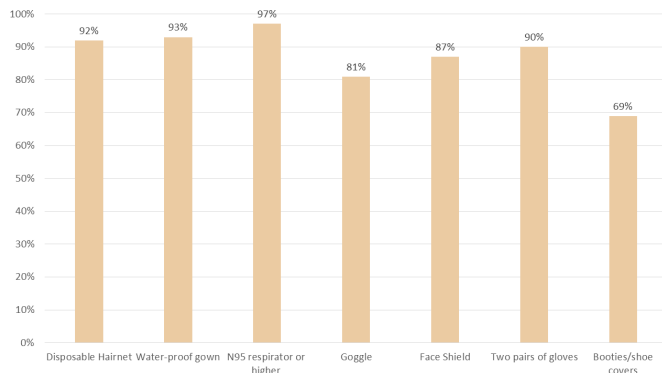
### Intraprocedure aspects

Regarding the type of endoscopic procedures during the pandemic, 78% (262/338) reported that they had exclusively performed emergencies or time-sensitive procedures.

Seventy-five per cent (254/338) considered all endoscopic procedures (gastroscopy, duodenoscopy and colonoscopy) to have a risk of aerosol generation, while 17% (59/338) did not consider colonoscopy to have risk of aerosol generation.

Eighty-three per cent (281/338) of endoscopists who undertook an endoscopic procedure in the last 4 weeks had used full PPE. Components of the PPE were provided entirely by the endoscopy centre 40% (139/338) of the time. The most frequent PPE components that were not provided were: goggles (65%, 130/199), an N95 respirator or higher (46%, 92/199), and face shields (39%, 77/199). The use of different PPE components in the care of patients with a high suspicion or confirmed diagnosis of COVID-19 is shown in figure 3.

For airway management during endoscopic procedures in patients with a high suspicion or confirmed COVID-19, 55% (186/338) of endoscopists individualised each case, 21% (70/338) would prefer to do it with the patient intubated, 20% (68/338) not intubated and 4% (14/338) considered intubation contraindicated in this scenario.



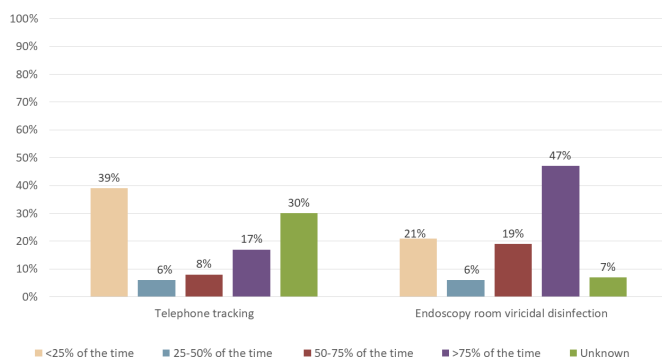
**Figure 3** PPE used during endoscopic procedures for patients with a high suspicion or confirmed COVID-19 diagnosis. PPE, personal protective equipment.

Eleven per cent (37/338) had a negative-pressure room available for performing endoscopy in patients with confirmed COVID-19.

### Postprocedure aspects

Figure 4 shows the rate of postprocedure telephone monitoring and disinfection of the endoscopy room. Up to a quarter of the time, none of these measures were carried out in the centres. Seventy-seven per cent (261/338) had reused PPE. The three most frequently reused components were: the N95 respirator or higher (78%, 194/261), goggles (67%, 67/261) and face shields (66%, 174/261). Those endoscopists who had reused a N95 respirator or higher did this with a standardised decontamination procedure 32% (108/338) of the time. The decontamination procedures used for the reutilisation of an N95 respirator or higher were: not using it for more than 72 hours (61%, 139/229), ultraviolet light (9%, 20/229), oven heat greater than 70°C (5%, 12/229) and vaporised hydrogen peroxide (4%, 9/229). Eight per cent (19/229) did not know the procedure used for decontamination and 21% (52/229) reused it without any standardised decontamination procedure.

We analysed possible differences in the adherence of all recommendations between private and public practice. In univariate analysis, a difference was observed in favour of the private sector in the following aspects: prior telephone evaluation of the patient (69.6% (87/125)



**Figure 4** Telephone tracking and postprocedure room disinfection.

vs 43.7% (93/213);  $p<0.001$ ), patient hand washing >75% of occasions (53.6% (67/125) vs 32.9% (70/213);  $p<0.001$ ), patient surgical mask supply >75% of occasions (63.2% (78/125) vs 47.4% (101/213;  $p=0.005$ ), complete PPE (89.6% (112/125) vs 79.3% (169/213);  $p=0.015$ ), N95 respirator reutilisation using a standardised decontamination method (39.2% (49/125) vs 27.7% (59/213);  $p=0.029$ ), postprocedure telephone tracking >75% of the time (34.7% (23/213) vs 26.4% (29/125);  $p<0.001$ ) and postprocedure endoscopy room disinfection >75% of the time (62.4% (78/125) vs 38% (81/213);  $p<0.001$ ). The only aspect that favoured the public sector was training for PPE placement/removal (69% (147/213) vs 58.4% (73/125);  $p=0.048$ ). Multivariate analysis is shown in table 2.

### DISCUSSION

According to our data, adherence to the recommendations for endoscopy practice during the COVID-19 pandemic in LA is adequate regarding intraprocedure aspects but is deficient in the preprocedure and postprocedure aspects.

Fever, cough, fatigue, and dyspnoea are reported symptoms that occur frequently in patients with COVID-19 (68%, 49%, 20%, and 20%, respectively).<sup>17</sup> Respiratory triage for patients is a simple strategy that can be helpful. A prior telephone evaluation can detect these symptoms and prevent a suspected patient with COVID-19 from transferring to the endoscopy unit, thus avoiding the risk of contagion. Mathematical models have estimated that a symptom-based screening strategy may fail to detect more than 50% of COVID-19 cases.<sup>18</sup> However, given the fact that it is a simple and cheap strategy, we believe that it should be used frequently. In our study, telephone assessment the day before the procedure was performed in only 53% of cases, maybe it can be related to availability of personnel to do it.

The greater contagiousness of SARS-CoV-2 is caused by a high viral load even in the presymptomatic phase.<sup>19</sup> In addition, SARS-CoV-2 can be transmitted via faecal-oral routes, which means that even colonoscopy can transmit the virus if it is present in the stool. Faecal clearance of SARS-CoV-2 in convalescent patients is slower compared with nasopharyngeal clearance.<sup>20</sup> Therefore, full PPE should be used for any endoscopic procedure. PPE training is a universal recommendation in which all associations from different continents agree and has been promoted by the World Organization of Gastroenterology even in low-resource settings.<sup>21</sup> We observed that even though 79% of endoscopists had seen changes to endoscopic procedures schedule more than 4 weeks ago because of COVID-19, only 65% reported specific PPE training. It is worrying that only 49% had a specific assigned area for the placement/removal of PPE. This represents a higher risk of infection. Greater and constant training is required, as well as the adaptation of endoscopy areas for safer working

**Table 2** Multivariate analysis\* of adherence to recommendations by endoscopists classified by type of practice (private vs public practice)

Variable	B coefficient	SE	Wald $\chi^2$	OR (95% CI)	P value
Previous telephone evaluation >75% of the time	0.95	0.28	11.4	2.59 (1.49 to 4.49)	<0.001
Patient hand washing >75% of the time	0.64	0.26	6.026	1.91 (1.14 to 3.21)	0.014
PPE placement/removal training	-1.19	0.29	16.95	0.30 (0.17 to 0.53)	<0.001
Postprocedure patient telephone tracking >75% of the time	0.83	0.34	5.74	2.3 (1.16 to 4.55)	0.017
Postprocedure endoscopy room disinfection >75% of the time	0.56	0.26	4.53	1.75 (1.04 to 2.94)	0.033

\*Multiple logistic regression.

PPE, personal protective equipment.

environments. Gastrointestinal endoscopy is considered a high-risk procedure because of the generation of aerosols. Complete PPE use was frequently reported by the participants in our study (83%). A recent North American survey showed similar rates of PPE utilisation for endoscopic procedures (86%).<sup>22</sup> An international survey (which did not include LA) showed a high rate of use of PPE (>90%) during endoscopic procedures.<sup>23</sup>

At the time of the study, 1.8% of endoscopists reported being infected with COVID-19. That rate is low if we take into account that up to 20% of the confirmed cases of COVID-19 in some LA countries have occurred in HCWs.<sup>7</sup> The rate of COVID-19 infection between endoscopists reported in a survey study done in Brazil alone was similar (1.7%).<sup>24</sup> In Italy, a study of HCWs carried out in the active phase of the pandemic, showed that 4.3% of HCWs had COVID-19. Most of the cases (85.7%) occurred before adopting generalised security measures (use of PPE, selection of cases of digestive endoscopy).<sup>25</sup> This suggests that the selection of endoscopy cases and the use of PPE are effective measures and explains the low frequency of COVID-19 infection observed in our survey.

Factors related to COVID-19 in HCWs are not entirely known. A cohort study showed that the risk of having a positive test for COVID-19 is 46% higher when PPE is reused and 33% higher when inadequate PPE is used.<sup>6</sup> These findings are a serious concern because 72.1% of respondents in our study reported PPE reutilisation, which is even higher than developing countries in other regions of the world. A survey conducted in Africa reported a PPE reuse rate of 43%.<sup>26</sup>

Although certain PPE components were originally designed for single use (eg, N95 respirator or higher), a shortage of resources has forced its reutilisation. Methods that have been shown to be effective in decontaminating a high-efficiency respirator without affecting its filtering capacity are ultraviolet light, vapourised hydrogen peroxide and dry heat.<sup>27</sup> Unfortunately, the previously mentioned methods accounted for only 18% of the respondents regarding alternative reuse strategies. The non-use of N95 respirator for 72 hours was a common reuse strategy in our study (62%). The theoretical fundament is based on a recent report that communicated virus viability on different inert surfaces,

including stainless steel and plastic, to be up to 72 hours.<sup>28</sup> However, this strategy has not been specifically studied in high-efficiency respirators. If we consider the previously mentioned virus viability on inert surfaces, disinfection with a viricidal agent should be a frequent practice after an endoscopic procedure. Despite this, we observed that only 47% reported disinfecting the room with a viricidal agent more than 75% of the times after an endoscopic procedure.

Telephone tracking is a postprocedure recommendation that was infrequently done in our study (figure 4). A European survey reported that contact for patients after 7–14 days from endoscopy to inquire about COVID-19 symptoms was done only 28.3% of the time.<sup>29</sup>

According to our data, adherence to recommendations for endoscopic procedures during the COVID-19 LA pandemic is adequate in the intraprocedure aspect (figure 2). This is probably explained because intraprocedure aspect depends largely on the endoscopist. Deficiencies in the preprocedure and postprocedure aspects could be due to the institute/hospital/clinic policy and not purely due to ancillary staff. Here, we decided to evaluate if there were differences between public versus private practice, based on that in LA, there is a general idea that the availability of resources is better in private practice. Differences in adherence to recommendations by endoscopists from the private sector compared with those in the public sector are mainly in the preprocedure and postprocedure aspects and may be related to fewer personnel in the public sector because these processes usually require more human resources for implementation and supervision (table 2). Given the fact that pandemic is still active in LA, endoscopists need to be more actively involved in monitoring and enforcing preprocedure and postprocedure recommendations.

Our study has limitations. First, the number of participants was less than calculated sample (in Mexico) and most of participants were from Mexico and Brazil. Second, other personnel who participate in endoscopic procedures, such as nurses, fellows, and anaesthesiologists were not included in the survey, so our findings cannot be generalised to all personnel. Finally, respondents were aware of the intent of the study, which might have led to bias in their answers. However, to the best



of our knowledge, this is the first and largest survey conducted that includes endoscopists from several LA countries.

In conclusion, adherence to intraprocedure recommendations for endoscopy practice in LA during the COVID-19 pandemic is adequate, but it is deficient in the preprocedure and postprocedure aspects.

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**Competing interests** None declared.

**Patient consent for publication** Not required.

**Data availability statement** Data are available in a public, open access repository. Data are available upon reasonable request. All data relevant to the study are included in the article or uploaded as supplemental information.

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**GENERAL INFORMATION****1.- What is your gender?**

Male

Female

**2.- How old are you?****3.- What is your Latin American country of current residence?****4.- What is your height in centimeters?****5.- What is your weight in kilograms?****6.- What is your academic formation?**

Internal medicine / gastroenterology

Surgery

Other

**7.- Do you suffer from any of the following diseases? (you can mark more than one)**

Hypertension

Diabetes

Chronic Obstructive Pulmonary Disease

Obesity

Moderate or severe Asthma

Any Cardiopathy

Autoimmune disease

Immunosuppressive therapy

Cirrhosis



Cancer

None of them

**8.- In which sector do you carry out your functions as an endoscopist?**

Private

Public

Both

**9.- How long have you had changes in the way you work in your endoscopy service due to coronavirus-associated disease (COVID-19)?**

< 2 weeks

Between 2 to 4 weeks

Between 4 to 8 weeks

> 8 weeks

**10. In the unit where you perform most of your procedures, were you informed of the service plan for patient care during the coronavirus pandemic?**

Yes

No

**11.- In case of working in the public sector, have work teams been set up to avoid a simultaneous contagion from all those who make up the workforce?**

Yes

No

Do not apply

**12.- In the unit where you practice most of your procedures, are there patients hospitalized with coronavirus-associated disease (COVID-19)?**

Yes

No

Do not apply

**13.-In the unit where you practice most of your procedures, have you or any endoscopist contracted coronavirus-associated disease (COVID-19) secondary to any contact with a patient from the center itself?**

I have contracted COVID-19

An endoscopist from the unit has contracted COVID-19

More than one endoscopist in the unit has contracted COVID-19

No endoscopist in the unit has contracted COVID-19

I don't know

**14.- Regarding endoscopic procedures in patients with high suspicion or confirmed with COVID-19: do you consider that you adhere to the current recommendations?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

I have not attended for a high-risk or confirmed COVID-19 patient

**15.- Regarding endoscopic procedures in patients with high suspicion or confirmed with COVID-19: do you consider that you receive the necessary support from your institution?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

I have not attended for a high-risk or confirmed COVID-19 patient

**16.-In relation to endoscopic procedures and COVID-19: where have you mostly obtained information on care and recommendations? (you can select more than one option)**

Internet

TV / Newspaper

Medical Journals

Webinar / On-line Sessions

**17. Are you afraid of acquiring coronavirus-associated disease (COVID-19) by conducting endoscopic studies?**

A lot

Regular

Little bit

None

#### **PRE-PROCEDURE ASPECTS**

**1.- In the hospital where you perform most of your endoscopic procedures, is a telephone evaluation carried out the day before to assess patient-risk for coronavirus-associated disease (COVID-19)?**

Yes

No

I don't know

**2- In the area where you perform most of your procedures, is there a specific area of respiratory triage for patients?**

Yes

No

I don't know

**3. In the area where you perform most of your procedures, is respiratory triage performed for the medical personnel?**

Yes

No

I don't know

**4. In outpatient care, is the patient invited to wash their hands with soap and water for at least 20 seconds?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

Do not apply

**5. Are three-layer (surgical) facemasks provided to all patients undergoing an endoscopic procedure?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

Do not apply

**6. In the unit where you practice most of your procedures, is temperature taken to patients prior to performing the procedure?**

Yes

No

I don't know

**7. Where you do most of your endoscopic procedures, is there a specific area to put on / take off PPE?**

Yes

No

**8. In the unit where you perform most of your endoscopic procedures, did you receive specific training to put on / take off PPE?**

Yes

No

**9. In the unit where you perform most of your procedures, is there a transportation protocol to the endoscopy room in a confirmed or highly suspected COVID-19 patient?**

Yes

No

I don't know

#### **INTRAPROCEDURE ASPECTS**

**1. What endoscopic procedure do you consider to be risky for aerosol generation?**

Gastroscopy

Duodenoscopy

Colonoscopy

Just gastroscopy and duodenoscopy

All of the above

**2.- In the area where you carry out most of your procedures, have those elective procedures not sensitive to time been deferred?**

Yes, only emergencies and time sensitive procedures are performed

No, workload is normal

Up to doctor discretion

**3.-Which disease or procedures do you consider urgent or not postponable during the current coronavirus pandemic, and therefore should it be carried out? (you can mark more than one)**

Acute Lower gastrointestinal bleeding

Continuing variceal band ligation protocol

Symptomatic benign esophageal stricture

Upper endoscopy for dyspepsia associated with weight loss or anemia

PEG / PEJ / NJ tube

Endoscopic treatment for polyp >1cm.

Jaundice secondary to choledocholithiasis

Jaundice secondary to malignant non-resectable disease

Jaundice secondary to malignant resectable disease

Colonoscopy for melena after negative upper endoscopy

Capsule for evaluation of suspected small bowel bleeding

Enteroscopy for bleeding evaluation of suspected small bower bleeding

Endoscopic ultrasound for solid tumor tissue acquisition

Endoscopic ultrasound Pseudocyst or Walled off necrosis drainage

**4. In performing endoscopic procedures for patients with high suspicion or confirmed with COVID-19, would you prefer that they be performed with the intubated patient?**

Yes

No

It is contraindicated

Each case is individualized

**5.-In the area where you perform most of your procedures, is there a potentially useful negative pressure room for studies in patients with coronavirus-associated disease (COVID-19)?**

Yes

No

I don't know

**6. During gastroscopy and duodenoscopy, do you use a high efficiency respirator (N95 or higher)?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

**7. What personal protective equipment do you use in patients with high suspicion or confirmed diagnosis of SARS COV-2 coronavirus-associated disease (COVID-19)? (you can mark more than one)**

Disposable hairnet

Water proof gown

N95 respirator or higher

Goggle

Face Shield

Two pair of gloves

Booties / shoe covers

**8. During colonoscopy, do you use a high efficiency respirator (N95 or higher)?**

< 25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

**9. Have you had to perform any procedures without the recommended complete personal protective equipment in the last 4 weeks?**

Yes

No

**10. From the following list, are there any components of personal protective equipment that are not provided by the institution where you carry out most of its procedures? (You can choose more than one option)**

Disposable hairnet

Water proof gown

N95 respirator or higher

Goggle

Face Shield

Two pair of gloves



Booties / shoe covers

None, all the personal protection equipment components are provided by the endoscopy department

**11. If the previous answer has been positive, in what percentage of the occasions do you put the personal protective equipment for your procedures?**

25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

Do not apply

#### **POST PROCEDURE ASPECTS**

**1. In the unit where you perform most of your endoscopic procedures, is the room disinfected with a viricidal agent after each procedure?**

25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

I don't know

**2. In the unit where you practice most of your procedures, is telephone follow-up performed 7 or 14 days after the procedure is performed?**

25% of the time

Between 25-50% of the time

Between 50 – 75% of the time

>75% of the time

I don't know

**3. Have you had to reuse material from personal protective equipment in the last 4 weeks?**

Yes

No

**4. If you answered yes, what material from your personal protective equipment did you have to reuse? (you can choose more than one option)**

Disposable hairnet

Water proof gown

N95 respirator or higher

Goggle

Face Shield

Two pair of gloves

Booties / shoe covers

I have not reused personal protective equipment

**5. If you have reused a high efficiency respirator (N95 or higher), is it submitted to a standardized decontamination process?**

Yes

No

I have not reused personal protective equipment

**6. In case of reusing a high efficiency respirator (N95 or higher), what decontamination process is done?**

Oven heat (> 70 degrees celsius)

Ultraviolet light

Vaporized hydrogen peroxide

Time (not using it for more than 72 hours)

I do not know what decontamination process is done

It is reused without any decontamination process

I have not reused personal protective equipment